

Third Grade Math Curriculum

Third Grade mathematics is about (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

Module 1: Properties of Multiplication and Division and Solving Problems with Units of 2–5 and 10

The first module builds upon the foundation of multiplicative thinking with units started in Grade 2. First, students concentrate on the meaning of multiplication and division and begin developing fluency for learning products involving factors of 2, 3, 4, 5, and 10. The restricted set of facts keeps learning manageable, and also provides enough examples to do one- and two-step word problems and to start measurement problems involving weight, capacity and time in the second module.

Module 2: Place Value and Problem Solving with Units of Measure

Module 2 focuses on measurement of time and metric weight and capacity. In exploratory lessons, students decompose a kilogram into 100 gram, 10 gram and 1 gram weights and decompose a liter into analogous amounts of milliliters. Metric measurement thereby develops the concept of mixed units, e.g. 3 kilograms 400 grams is clearly related to 3 thousands, 4 hundreds. Students then apply their new understanding of number to place value, comparison and rounding, composing larger units when adding, decomposing into smaller units when subtracting. Students also draw proportional tape diagrams to solve word problems (e.g., “If this tape represents 62 kg, then a tape representing 35 kg needs to be slightly longer than half the 62 kg bar...”). Drawing the relative sizes of the lengths involved in the model prepares students to locate fractions on a number line in Module 5 (where they learn to locate points on the number line relative to each other and relative to the whole unit). Module 2 also provides students with internalization time for learning the 2, 3, 4, 5, and 10 facts as part of their fluency activities.

Module 3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10

Students learn the remaining multiplication and division facts in Module 3 as they continue to develop their understanding of multiplication and division strategies within 100 and use those strategies to solve two-step word problems. The “2, 3, 4, 5 and 10 facts” module (Module 1) and the “0, 1, 6, 7, 8, 9 and multiples of 10 facts” module (Module 3) both provide important, sustained time for work in understanding the structure of rectangular arrays to prepare students for area in Module 4.

Module 4: Multiplication and Area

By Module 4, students are ready to investigate area. They measure the area of a shape by finding the total number of same-size units of area, e.g. tiles, required to cover the shape without gaps or overlaps. When that shape is a rectangle with whole number side lengths, it is easy to partition the rectangle into squares with equal areas.

Module 5: Fractions as Numbers on the Number Line

One goal of Module 5 is for students to transition from thinking of fractions as area or parts of a figure to points on a number line. To make that jump, students think of fractions as being constructed out of unit fractions: “1 fourth” is the length of a segment on the number line such that the length of four concatenated fourth segments on the line equals 1 (the whole). Once the unit “1 fourth” has been established, counting them is as easy as counting whole numbers: 1 fourth, 2 fourths, 3 fourths, 4 fourths, 5 fourths, etc. Students also compare fractions, find equivalent fractions in special cases, and solve problems that involve fractions.

Module 6: Collecting and Displaying Data

In Module 6, students leave the world of exact measurements behind. By applying their knowledge of fractions from Module 5, they estimate lengths to the nearest halves and fourths of an inch and record that information in bar graphs and line plots. This module also prepares students for the multiplicative comparison problems of Grade 4 by asking students “how many more” and “how many less” questions about scaled bar graphs.

Module 7: Geometry and Measurement Word Problems

The year rounds out with plenty of time to solve two-step word problems involving the four operations, and to improve fluency for concepts and skills initiated earlier in the year. In Module 7, students also describe, analyze, and compare properties of two-dimensional shapes. By now, students have done enough work with both linear and area measurement models to understand that there is no relationship in general between the area of a figure and perimeter, which is one of the concepts taught in the last module.